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THE AGIGEA STATION FOR MARINE ZOOLOGY

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- Rumania -

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Rumania

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The sea, this infinite stretch of water, is perpetually restless,even in the most delightful weather. Starting from the open sea, foamy waves somersault along its surface toward the shores,ending broken on the sea shore cliffs and stony seawall,or vanishing exhaustedly on the golden beaches.

All this takes place on the surface.They are phenomena which can be seen and admired by anybody. But what is happening in the depth? what unseen world the infinite stretches of water are hiding? It is a question which has kept many scientists busy for many years and which nowadays may have its answer in many forms.

One of these scientists who yielded to the desire of unveiling the mysteries of the depth of the sea has been also professor Ion Borcea. Due to the numerous researches which he undertook the Rumanian oceanography attained a leading position. But until it arrived there, Prof.Borcea had to fight with the negligence of the bourgeois landowner regime of his time. First of all, an institution was missing which would permit this kind of studies. A scientific literature of the specialty was also non-existent. Likewise, the research instruments as well as the study material were missing. Many years passed by until in 1962 the Marine Zoological Station of Agigea was set up.

The place where it is located(10 km south of Constanta) has been chosen with particular care on the part of its founder. There, along the seaside of the station, all possible variants of sea bottom

are encountered on whose reefs several species of Algae,mud with seaweed,sand,etc. settle down. So it came about that through the front of the Agigea promontory a rich fauna passes one after the other, attracted only by the diversity of environments.

Prof.Borcea is interested especially in fish biology,but in connection with this, he also studied other animals and animal associations, being concerned particularly with the food sources from the Black Sea,that is, with the creatures which are food for the fish. The findings collected by him in regard to the life of fish (migration, reproduction, economic importance, possibility of their valorization) are so complete that even today they are valuable,while the fishing in the Black Sea is based upon these researches even at the present time.

From its setting up, the Station has had many-sided research studies. Among these are the studies on malaria and the Anopheles mosquito as well as the studies on the composition of the Dobrudja soils.

What does the tourist see today who,wishing to get acquainted with the regions of his motherland,calls on Agigea? From the distance, a veritable oasis appears, sort of an island made green by the many fruit-tree plantations which surround the edifices and which by their presence cheer up the landscape of the otherwise so arid Dobrudja steppe. But when the visitor will walk farther and will ask permission to visit the main building,for instance, he will find that he is in a truly scientific institution.

Beginning in 1949, i.e.,in the year of the People's power, the Agigea Station has developed greatly. Today it includes more laboratories: -- for zoology, ichthyology, planktonology, animal physiology,radioactive laboratory,biochemical lab,etc. Each laboratory has an aquarium into which the water is pumped directly from the sea,while the ventilation is made with modern installations. Today the investigators have the most perfect research instruments at hand such as microscopes, cytoplasms(:perhaps cell counters), binoculars, different physiological apparatuses. In addition, the Station also has a beautiful research ship which can make excursions far out on the open sea whenever it is necessary. Similarly, the Station has now one of the richest libraries of its specialty in Romania and even in foreign countries.

The investigators of this place,though small in number, are developing a rich and complex activity. They collect and determine the fauna and flora of the Romanian waters of the Black Sea; they

pursue problems of radioactivity; they study the marine currents, the salinity,etc. As a result it was found that the Black Sea has a few peculiar features. Thus, examining the depth chart, it can be observed that it varies greatly from the shore toward the center. While along the seashore of the Caucasus and of Asia Minor the depths start at several meters and reach 2000 m about 70 km away from the shore, in the line of Romania there is a plateau which slopes slowly toward the deep sea. The greatest depth known at present in the Black Sea is 2,252 m.

The water of the Black Sea is less salty than the water of other seas and oceans. The surface layer of the water is much sweetened due to the waters of the large rivers which empty into this basin. The analysis showed that this layer contains only 16 - 18 g salts per liter,in contrast with the waters from the depth where the salinity reaches up to 24 g per liter. But this is not too much since we know that the salinity of other seas varies between 35 and 37 g per liter.

The water of the Black Sea shows,however, a stratification not only from the viewpoint of salinity but also from the aspect of oxygen content. In July when the temperature of the surface water reaches 22°C, one liter of this water contains 78 cm^3 O_2;at 50 m depth where the temperature is 8°C,the O_2 quantity is 10 ml per liter, and at 140 m we find a minute amount of O_2.Below 180 m, no trace of O_2 is found,although the water temperature is kept always between 8° and 9°C. On the other hand, the deep-sea water contains hydrogen sulphide(at a depth below 175 m, 1 liter of water contains 1 ml of hydrogen sulphide).

It has been known for a long time that no life can exist without O_2; hence, in the Black Sea also,there where O_2 is absent both plants and animals are absent(more than 2/3 of the bottom surface of the sea and 3/4 of the mass of water is lifeless). The studies undertaken by Soviet investigators as Zernov,Knipovici,Nikitin,etc., and on the part of the Romanian Grigore Antipa, Ion Borcea, Gavrilescu,Popovici,Bacescu,S.Carausu and others who carried out the large part of their research works at the Agigea Zoological Station have shown that the lower limit of life in the Black Sea is 180 m. Below this depth nothing else can be found but sulphide bacteria.

This situation cannot be encountered in any other sea of the Globe,and,of course, it has repercussions upon the entire biology of the Black Sea as well as upon the fishing. Thus it is explained that the Black Sea fauna is poorer in species than the fauna of other seas. Here the corals, crayfish,lobsters, octopuses are entirely missing. From the 350 fish species of the Mediterranean, only 74 are

found in the Black Sea, among which some are well adapted to the conditions of life at this place, others are transient, since their mode of reproduction and development does not let them to permanently settle in the Black Sea.

Among the fish found in the Black Sea and in the Mediterranean I can include the turbot, the flounder, the anchovy(Engraulis), the atherine, the grey mullet, the shortfinned tunny, the sea gudgeon,the blue mackerel,etc. But in addition to these species, the Black Sea is also inhabited by native species such as the sturgeons(beluga, common sturgeon, stor sturgeon) and the "herrings of the Black Sea".The fish production of the Black Sea is 7.5 kg per hectar according to the latest researches. The net-fishing directly from the Agigea Station is one of the most productive fishing which proves our previous statement about the richness and variety of living species in front of the Agigea promontory.

All this proves that the Black Sea is not a basin entirely poor in fish,as it has been thought for a long time,but that it has remarkable reserves.

As a part of the research plan related to the Black Sea and worked out on the basis of the Tripartite Convention(in which the USSR,Bulgaria and Romania participate), the naturalists of the Agigea Station were charged with the study of life on the stony bottom of the sea, beginning with the chemistry of the water and ending with the fish species. On the execution of this charge with a happy outcome, many people are working: --chemists, zooplanktonists, ichthyologists, specialists in the technique of fishing, while it can be said at present that the field work has been finished, and it remains that the gathered material and the observations which were made should be processed in the laboratory with a view of drawing the final conclusions.

The Agigea Station also offers wide possibilities for all student naturalists in Romania for the completion of their studies, and for the professors of secondary and university education it offers opportunities for making here a few researches and experiments. But not a few are the scientists from abroad who come here to work from time to time. As a proof of the high esteem which the Station enjoys in the whole world there is also the fact that it has connections with more than 140 similar stations of the globe,keeping up with them a large exchange of publications and study materials.

All this entitles us to say that the Marine Biological Station of Agigea is at present -- owing to the support by the Party,

the government and the tireless work of the naturalists -- a scientific institution which is a credit to Romania.

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